

Abstract Submitted
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Toward understanding the breakup mechanism of triatomic molecular ions in an intense laser field¹ UTUQ ABLIKIM, MOHAMMAD ZOHRABI, BETHANY JOCHIM, KEVIN CARNES, ITZIK BEN-ITZHAK, J.R. Macdonald Laboratory, Department of Physics, Kansas State University, Manhattan, KS 66506 — Studies of laser-induced dissociation and ionization of triatomic molecular ions is a key step toward understanding the breakup mechanisms of complex systems in an intense laser field. This study is focused on two questions: (1) Does a triatomic molecular ion XY_2^+ bend during the interaction with a strong ultra-short laser field? (2) What is the preferred dissociation or ionization alignment relative to the laser polarization of such molecular ions? We implement a coincidence three dimensional momentum imaging technique, which allows us to measure all the neutral and charged fragments of any breakup channels of a triatomic molecular ion in coincidence. For example, we have studied a CO_2^+ ion beam, exposing it to intense 30 fs, 790 nm laser pulses with intensity up to 10^{15} W/cm², in order to address the above questions.

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